**Daily Report: Tracking the Plume of Dispersed Oil using Particle Size Distribution Measurements and Fluorescence Intensity Ratios**

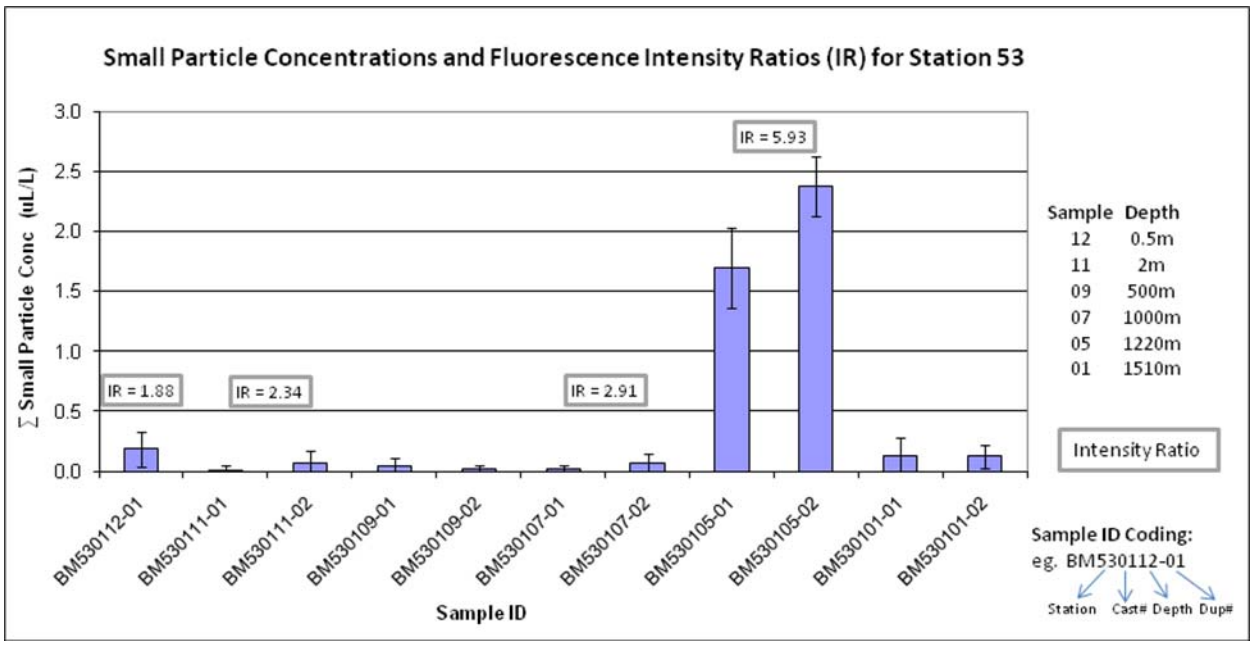
**May 30, 2010**

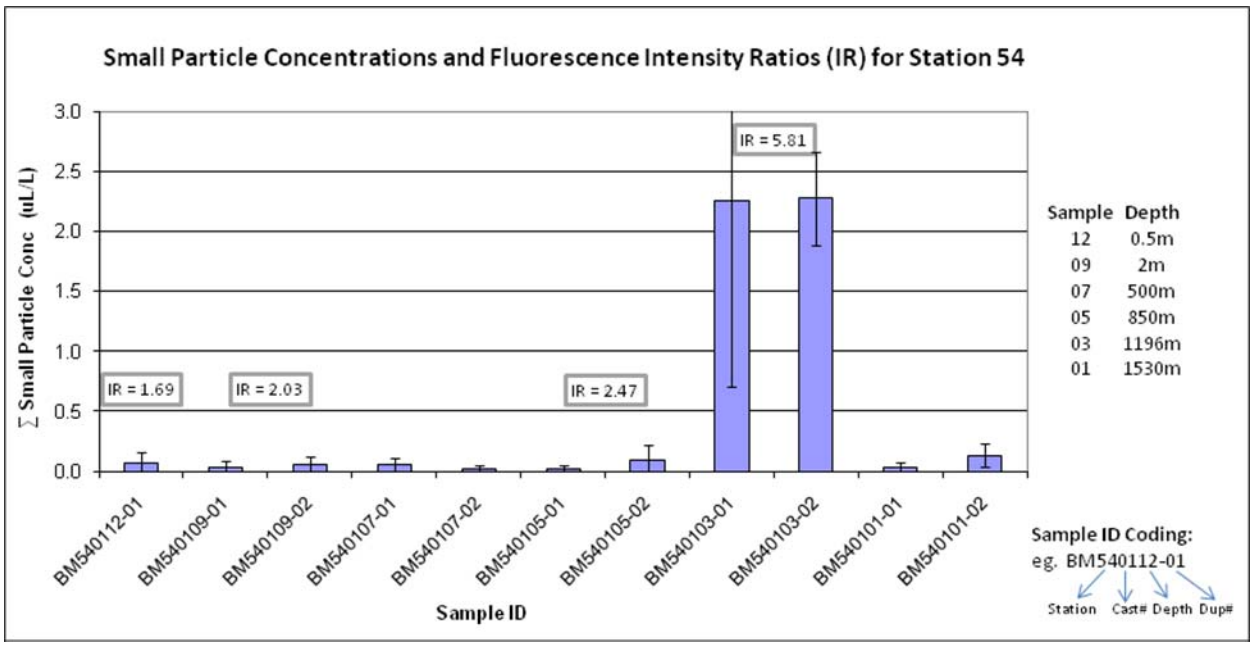
Water samples were collected at three stations for particle size distribution measurements using the LISST-100X particle counter. A total of 33 LISST samples were analyzed, including duplicates. Selected samples taken from depths of elevated fluorescence from the CTD trace were also collected for fluorescence intensity ratio measurements and analyzed using a Quantech Life Sciences fixed wavelength fluorometer.

Figure 1 presents the small droplet ($\sum$ 2.5 - 60µm) particle size data and fluorescence intensity ratios for stations BM53 through BM55. Stations BM53 and BM54 were located 1 to 1.5km from the wellhead in the southwest quadrant, while station BM55 was 3km northwest from the wellhead.

Elevated concentrations of small particles were detected in the deepwater plume (approx. 1200m) at Stations BM53 and BM54. The increase in small particle concentrations at these depths also corresponds to data from the *in situ* CTD fluorometer. The deepwater plume was not evident at Station BM55 in either the CTD fluorescence trace or LISST particle size measurements.

The results of fluorescence intensity ratios showed lower ratios in the near surface waters (2m or less) than in samples taken from the deepwater oil plume.


Small Particle Concentrations and Fluorescence Intensity Ratios (IR) for Station 53
∑ Small Particle Conc (uL/L)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
IR = 1.88
IR = 2.34
IR = 2.91
IR = 5.93
BM530112-01
BM530111-01
BM530111-02
BM530109-01
BM530109-02
BM530107-01
BM530107-02
BM530105-01
BM530105-02
BM530101-01
BM530101-02
Sample ID
Sample Depth
12 0.5m
11 2m
09 500m
07 1000m
05 1220m
01 1510m
Intensity Ratio
Sample ID Coding:
eg. BM530112-01
Station Cast# Depth Dup#


Small Particle Concentrations and Fluorescence Intensity Ratios (IR) for Station 54
∑ Small Particle Conc (uL/L)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
IR = 1.69
IR = 2.03
IR = 2.47
IR = 5.81
BM540112-01
BM540109-01
BM540109-02
BM540107-01
BM540107-02
BM540105-01
BM540105-02
BM540103-01
BM540103-02
BM540101-01
BM540101-02
Sample ID
Sample Depth
12 0.5m
09 2m
07 500m
05 850m
03 1196m
01 1530m
Sample ID Coding:
eg. BM540112-01
Station Cast# Depth Dup#

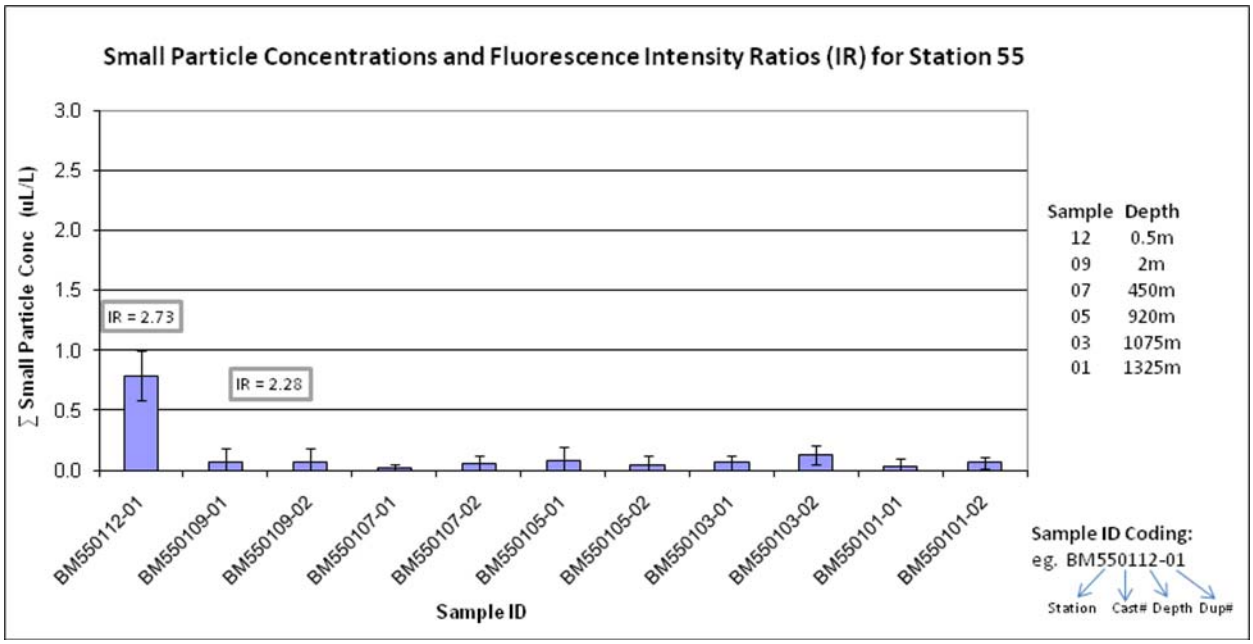



Figure 1: Average small particle concentrations and fluorescence intensity ratios as a function of depth for stations BM53 to BM55.